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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,580	07/18/2003	Seo-Young Lee	SEC.1056	2106

20987 7590 04/18/2005

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EXAMINER

BARRY, CHESTER T

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/621,580

Applicant(s)

LEE ET AL.

Examiner

Chester T. Barry

Art Unit

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
4a) Of the above claim(s) 1 and 2 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 3-10 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

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Applicant's election without traverse is noted with appreciation. Should this case be allowed, applicant's cancellation in response to this Office action of claims 1 – 2 directed to the non-elected invention may speed issuance of the patent. Applicant is therefore encouraged to cancel claims 1 – 2 in response to this Office action.

Claims 3 – 10 are rejected under 35 USC Sec. 112(2nd) as failing to particularly point out and distinctly claim the invention. A mixture or slurry of porous solid material in a liquid is comprehensible. A solution of a dissolvable solid, such as table sugar, in warm water, can easily be understood. A "solution" of porous material, however, cannot be understood for once the porous solid dissolves in the liquid, its physical pore structure is intractable. Per claim 6, it is unclear what "over-aerated" means. Per claim 7, it is unclear what "demanded oxygen" means. Does it mean BOD? COD? Or does it simply refer to the dissolved oxygen concentration? Correction is required.

Objection is made to claim 8 because capitalization of the word "zeolite" implies that the word is a tradename or trademark. There is no evidence that the word "zeolite" is a tradename or trademark. Correction to "zeolite" (lower case "z") is required.

Claims 3 – 10 are rejected under 35 USC Sec 103(a) as obvious over NEC in view of Miller.

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JP 11-299484 to NEC Corp describes a wastewater treatment system comprising a waste water tank (Fig. 1) for collecting waste water containing dimethylsulfoxide (Abstract); an aeration tank (Fig. 1) connected to the waste water tank via a connection pipe and containing a mixture solution of a porous material. The average size of pore openings of the porous material cannot readily be determined from the reference. It would have been obvious, however, to have selected a material, such as the zeolite-containing porous biocarrier material described by USP 5569634 to Miller, in order to achieve the various benefits of bioprocessing with the Miller material, e.g., large pore size. See Miller's comment in col 1 that prior art pores were too small at 1 um or less. Miller's pore size of 0.5 – 100 um, on the other hand, is better. It also reads on applicant's pore size range of 60-550 um. NEC describes in Fig. 1 a treated water tank for returning a portion of treated waste water to the waste water tank and collecting the remaining treated water therein. It is not clear whether a sedimentation tank connected to the aeration tank via a connection pipe for biologically decomposing the dimethylsulfoxide and settling sludge produced therein is described by NEC, but provision of a sedimentation tank for settling sludge and the like would have been obvious to the skilled artisan in this art because of the ubiquity of such sedimentation vessels in biological sludge based processing systems of this general nature.

The concentration of the porous material in the liquid is not readily discernible from the reference. It would have been obvious, however, to have optimized the concentration of the porous biocarrier in the liquid because surface area for supporting microorganisms is a known result-effective variable in microbial processing of waste.

Per claim 4, it is commonplace that wastewater under treatment be rendered aerobic by blowing air through submerged aerators or air diffusers. See, for example, USP 6245237 to Blough. Therefore, it would have been obvious to have aerated the NEC wastewater to a slightly aerobic condition by blowing air into the wastewater.

Per claim 5, it would have been obvious to have flowed the wastewater at any desired flow rate depending, for example, on the rate at which wastewater needed to be treated.

Per claim 6, it is not clear that applicant's term "over-aerated" does not fully encompass NEC's condition of "slightly aerobic." This limitation is deemed met by NEC in view of Miller, therefore.

Per claim 7, to the extent that "demanded oxygen" means the DO concentration, it would have been obvious to have optimized the dissolved oxygen concentration because DO is a known result-effective variable.

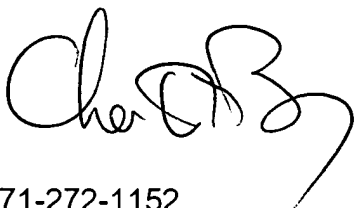
Per claim 8, the porous material is a zeolite material because Miller's suggested material comprises zeolite.

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Per claim 9, it would have been obvious to have added however much acid or base, e.g., sodium hydroxide, was necessary to maintain a neutral pH to facilitate bioprocessing of the waste.

Per claim 10, it would have been obvious to have optimized SRT because SRT is a known result-effective variable in bioprocessing of waste.

The four other cited references describe treatment of DMSO-containing wastewater.

A handwritten signature in black ink, appearing to read "Chestert. Barry", with a stylized flourish extending from the end.

571-272-1152

CHESTERT. BARRY
PRIMARY EXAMINER